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(56) Documents Cited

GB 2264613 A GB 2262410 A GB 2249447 A

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ONLINE: WPI, JAPIO, CLAIMS

(54) Car radio adaptor for a cellular telephone

(57) The adaptor comprises a housing to be detachably placed over the earpiece of a telephone handset. The housing contains a microphone 16 to receive the acoustic output of the telephone. These audio signals are passed to a radio transmitter (fig. 3) and broadcast to be received by the car radio. The audio signals are then output by the loudspeakers of the in-car entertainment system. The housing includes gripping arms 12A, 12B to hold the telephone handset, an on/off switch 28 operated by one of the gripping arms and a fine tuning device 18 to control the frequency of the radio transmitter.

An alternative arrangement is described in which the radio transmitter is electrically coupled to the telephone earpiece and built into the handset.

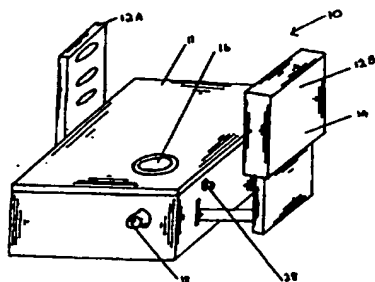


FIG 1

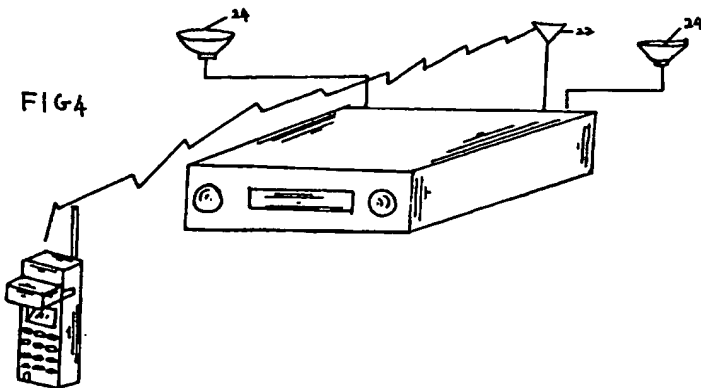
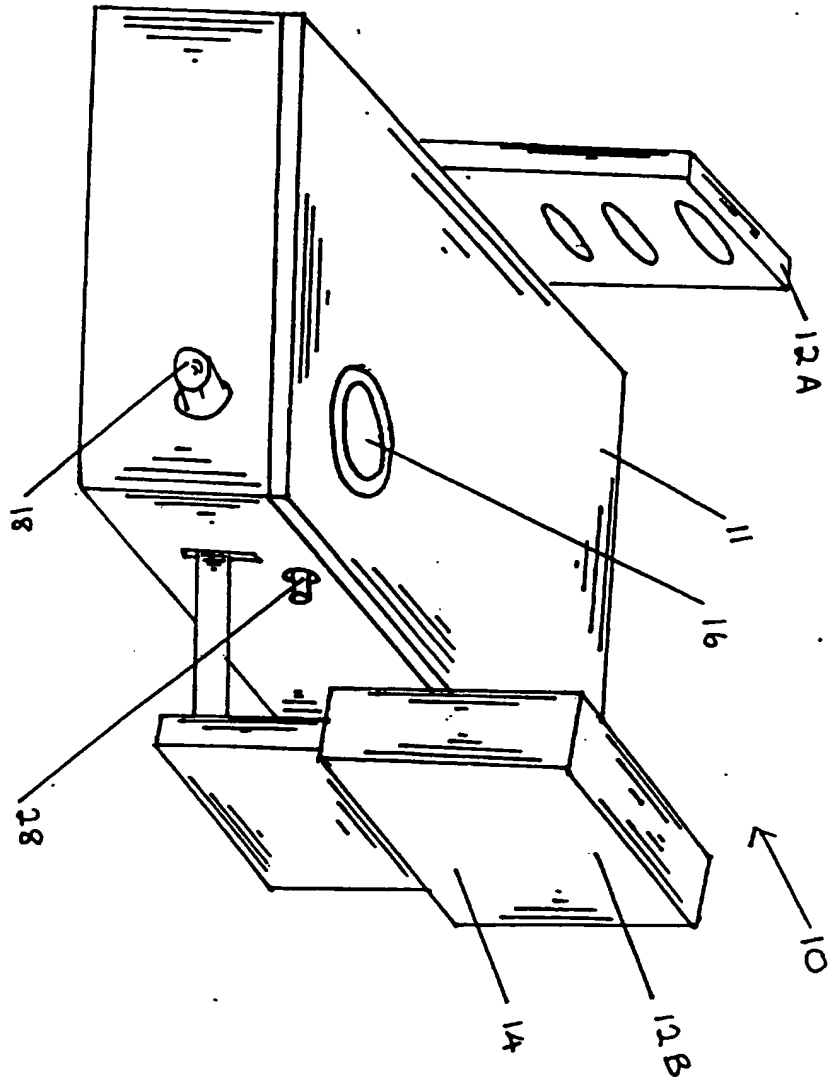


FIG 4

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FIG 1



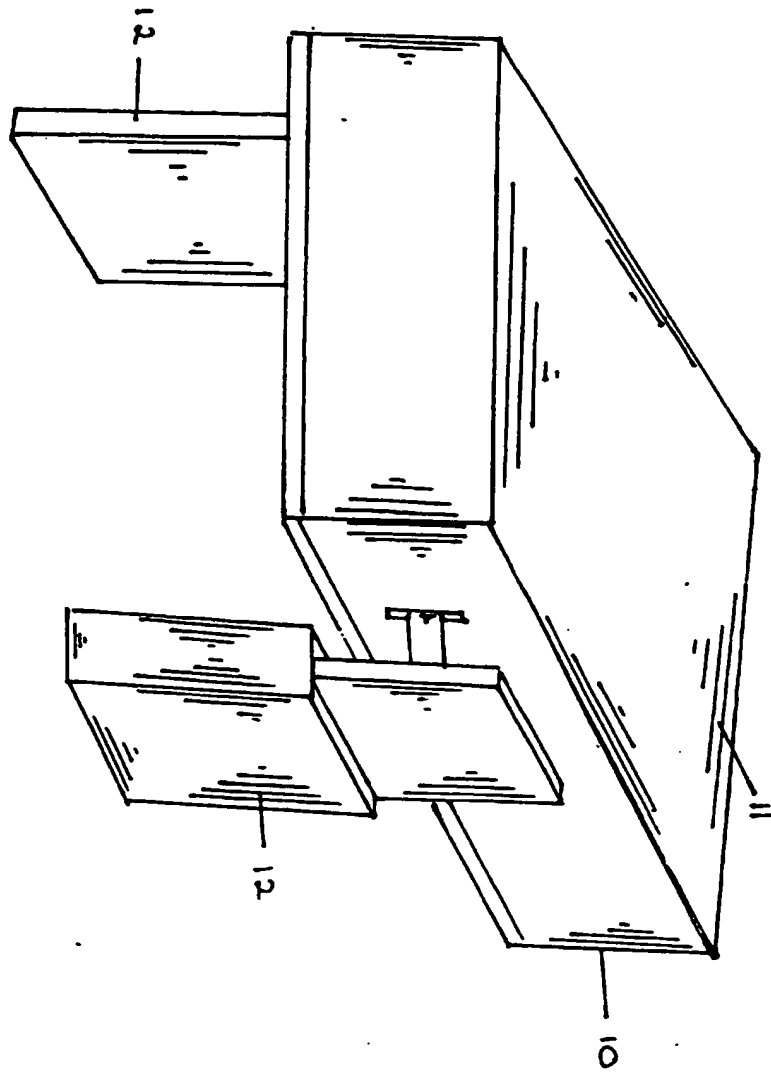


FIG 2

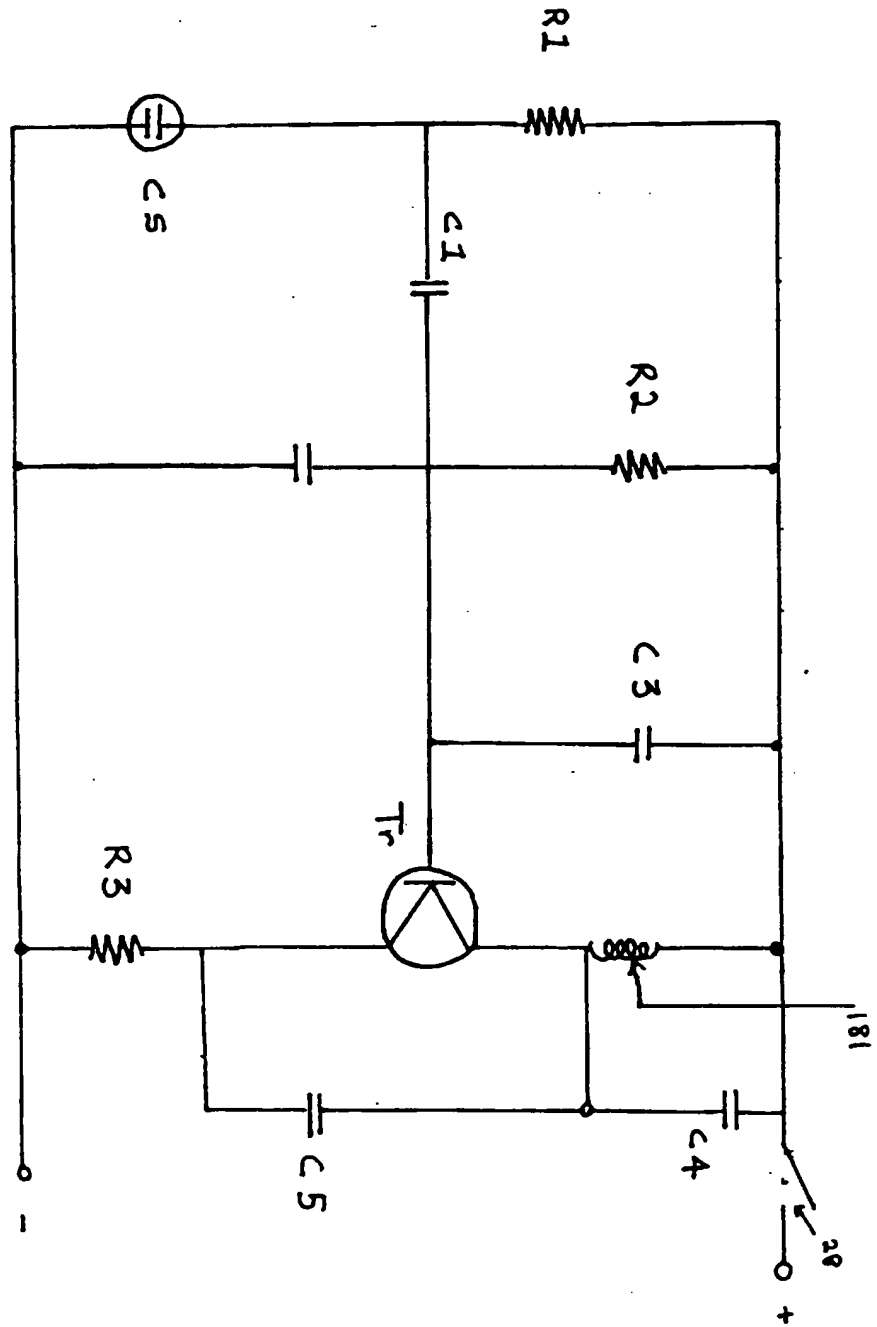


FIG 3

FIG 4

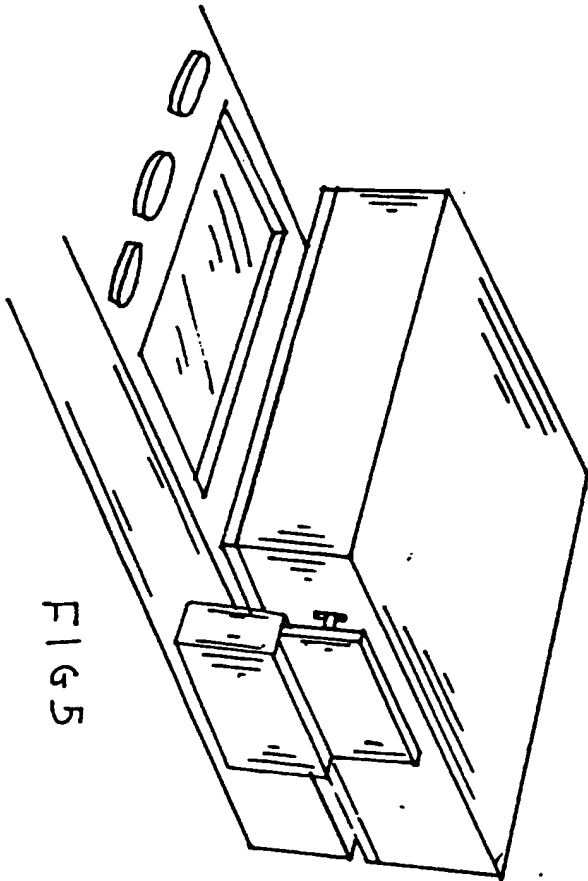
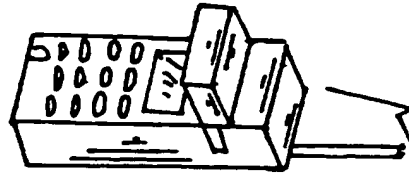
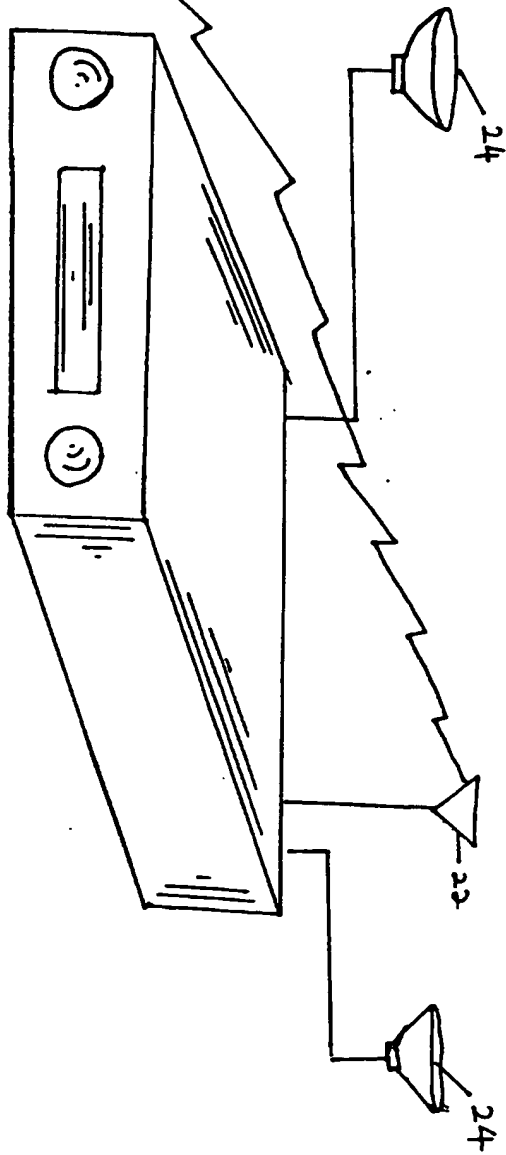


FIG 5



DEVICE FOR USE WITH A TELEPHONE

The present invention relates to device for use with a telephone, more particularly the invention relates to attachments to a device for use with a cellular telephone whereby radio signals from the device are transmitted to a radio. In another aspect audio signals or sound from a cellular telephone is received by an attachment to the cellular telephone and is transmitted to a radio at a pre-determined wavelength, such that the audio signals or sound is now reproduced through the speakers of the radio at a magnified level.

The use of cellular telephones is common now. Recent studies have shown that holding a cellular telephone while driving a motor vehicle distracts the driver's attention from the road and is likely to cause an accident. Such acts also pose a danger to other road-users. The problem is serious enough to lead many countries to bar the use of cellular telephones while driving a motor vehicle. Nevertheless there is still a need to use a cellular telephone by a person whilst driving a motor vehicle, as otherwise the benefits of communication using a cellular telephones are greatly reduced.

At present handsfree devices for cellular telephones for use in motor vehicles, often involve drilling of holes on various parts of the dashboard of the motor vehicle, messy wiring, and the installation of cellular telephone holder permanently in the motor vehicles.

Thus it is an objective of this invention to provide a practical hands free system for a cellular telephone to enable a driver to carry out a conversation on the cellular telephone without holding the cellular telephone with his/her hands whilst driving the motor vehicle.

It is another objective of this invention to provide a means whereby more than one person is able to simultaneously listen to the audio signals output from a cellular telephone.

Yet another objective of this invention is to provide a means which transmits audio signals in the form of radio waves to a radio and which is attachable to different models of cellular telephones.

Another objective of this invention is to provide a means whereby audio signals from a cellular telephone are reproduced and magnified in a radio receiver

without the use of wires connecting the cellular telephone and the radio receiver.

The invention discloses a means to reproduce audio sound produced at an earpiece of a telephone through a speaker of a radio comprising a converter means responsive to audio signals from the earpiece which produces therefrom radio signals corresponding to the audio signals, the radio signals being received by the radio which produces the audio signals therefrom which are reproduced reproduced by the speaker of the radio. The converter means is a free detachable unit conveniently and removably secured over the earpiece of the telephone. The converter means includes a housing to contain a circuit means.

The invention will now be described in detail by reference to a preferred embodiments by way of illustration only and not by limiting the scope of the invention, in which:-

Fig. 1 is a perspective view of a converter.

Fig. 2 is another perspective view of the converter shown in Fig. 1.

Fig. 3 is a circuit diagram of the converter shown in Fig 1.

Fig. 4 is a diagrammatic representation of functional relationship between the converter and the radio receiver unit.

Fig 5 is a perspective partial view of the converter attached to a cellular telephone.

Referring to Figs 1 to 5, there is shown a converter unit (10) consisting of a housing body (11) with a pair of handles (12) attached to the sides. Preferably one of handles is fixed in position whilst the other opposing handle is slidably fixed on the housing body (11) such that the distance between the two handles is variable. The second handle (12B) is preferably secured by a biasing means to the housing body, so that the converter unit can be easily secured to a cellular telephone (see Fig 5). The second handle can activate a on/off switch (28) in the housing body. The second handle (12B) is biased into a position where it is close to from the handle 12A in a rest position. To provide a tighter grip over the cellular telephone and also to reduce surface damage to the cellular telephone, the handles are preferably covered with suitable material, such as rubber caps (14), or rubber sponges or other like materials. It will be appreciated that the switch (28) can be placed to other parts of the circuit to shut off the power supply.

The housing body (11) of the converter unit includes an aperture or a window (16) on one side. The aperture (16) is positioned on the housing body such that when the housing body unit is fixed over the cellular telephone, the aperture is over or in close proximity to the earpiece of the cellular telephone.

5 The housing body (11) also includes a fine tune knob (18). Contained within the converter unit (10) is an electronic circuit, an embodiment of which will be described now.

The electronic circuit includes a plurality of condenser units, resistors, coil, transistor and a condenser sensor electrically connected together and is powered by
10 electricity means. The circuit is powered by a 1.5V AAA size battery which is small enough to be housed within the housing body.

When the converter unit is energised, by extending second handle (12B) further from the first handle (12A) the audio sound output from the earpiece of the cellular telephone will be sensed by the condenser sensor (CS). The audio sound is
15 filtered by the capacitor 104nF (C1). The resistor 4.7K (R1) controls the power supply from the 1.5V battery to the condenser sensor (CS). The resistor 15K (R2) and the condenser 47p (C3) will control the timing and the power supply of the oscillation in the transistor (Tr). The capacitor 330pF (C2) will stabilise the oscillation. The transistor (Tr) will amplify the audio signal into frequency for transmission. The coil (CO) will
20 transmit the signal according to the wave length frequency (MH3) which is determined by the capacitor 68pF (C4) and the capacitor 10pF (C5). The frequency is fine tuned by a fine tuning knob (18) and a regulator circuit (18). The tuning knob (18) modifies the value of the capacitors (C4 and C5) to change the modulation frequency over what the radio waves are emitted. The resistor 47 ohm (R3) will stabilise the
25 power supply to the transistor (Tr). The condenser sensor (CS) is in close proximity to the aperture (16) in the converter unit (10).

The working of the converter unit and other features of the invention will be described now. A radio (20) with a pre-determined frequency channel can receive the signal that is transmitted by the coil (CO) at a pre-determined wavelength.
30 For instance, if the signal is transmitted at 102.6 FM MH3, the radio (20) can be tuned to FM station at 102.6 MH3 in order to receive the transmission via the radio aerial (22). The corresponding audio signal is produced in the speakers (24) of the radio (40).

The built-in microphone of the cellular telephone (26) picks up the voice in the ambience. This voice of other persons in the vicinity of the cellular telephone can be picked up by the cellular telephone. Thus, it will be appreciated that more than one person can speak into cellular telephone and hear sound from the speakers attached to the radio. The users can listen and talk without holding the cellular telephone and in a hands-free manner.

In an alternative embodiment, the electronic circuit of the converter unit (10) is enclosed within the cellular telephone unit. The circuitry of the converter unit (10) as illustrated in Fig 2 lends itself to be enclosed within the handphone unit (10). Further the power to energise the converter unit (10) can be drawn from the power source of the handphone itself. A separate on/off switch can be provided on the keypad of the handphone or alternatively at another convenient spot on the handphone.

In the event the circuitry of the converter unit (10) is enclosed within the handphone, the circuitry lends itself to further modifications. For example, the radio signals for the sound received by cellular telephone need not be converted into audio signals at the earpiece. Instead the sound reproduction circuit of the cellular telephone can be bypassed as the electrical signals of the incoming radio signals can be electrically connected directly to the transmitter circuit of the converter unit when the converter unit (10) is energised. When the converter unit is not energised, the cellular telephone operates as in normal cellular telephones without the converter unit circuit.

Although the invention has been described with reference to the use of the converter unit (10) a cellular telephone for use in association with a radio set in an automobile vehicle, it would be appreciated that the invention can be similarly used in association with a ordinary household radio set for use in house, offices or any other place. A number of persons can talk into and listen to a telephone conversation.

CLAIMS

1. A means to reproduce audio sound produced at an earpiece of a telephone through a speaker of a radio, comprising of a converter means responsive to audio signals from the earpiece which produces therefrom radio signals corresponding
5 to the audio signals, the radio signals being received by the radio which produces the audio signals therefrom which are reproduced by the speaker of the radio.
2. A means to reproduce audio sounds produced at an earpiece of a telephone through a speaker of a radio as claimed in Claim 1 wherein the converter means includes
10 an electrical and electronic circuit means that is responsive to audio signals from the earpiece of the telephone and transmits radio waves corresponding to audio signals.
3. A means to reproduce audio sounds produced at an earpiece of a telephone through a speaker of a radio set as claimed in Claim 2 wherein the electrical and
15 electronic circuit means comprises a sensor means adapted to receive audio signals from the earpiece of the telephone, an amplification and modulation means and a transmit means.
4. A means to reproduce audio signals produced at an earpiece of a telephone
20 through a speaker of a radio as claimed in Claim 1 wherein the converter means is removably fastenable over the earpiece of the telephone.
5. A means to reproduce audio signals produced at an earpiece of a telephone through a speaker of a radio set as claimed in Claim 4 wherein the converted means
25 includes a pair of holding arms arranged to releasably hold said converter means securely fit tightly over the earpiece of the telephone.
6. A means to reproduce audio-signals produced at an earpiece of a telephone through a speaker of a radio set as claimed in Claim 5 wherein at least one arm of the
30 pair of holding arms operate a switch to energise the electrical/electronic circuit means.
7. A means to reproduce audio signals produced at an earpiece of a telephone

through a speaker of a radio set as claimed in Claim 5 wherein one of the holding arms is slidably mounted to the converter unit.

8. A means to reproduce audio sound produced at an earpiece of a telephone through a speaker of a radio set as claimed in Claim 1 wherein the telephone is a cellular telephone.

9. A means to reproduce audio sound produced at an earpiece of a telephone through a speaker of a radio set as claimed in Claim 1 wherein the radio set is a radio set of an automobile.

10. A means to reproduce audio sound produced at an earpiece of a telephone through a speaker of a radio set as claimed in Claims 1 and 3 wherein the converter means is housed in a housing body (11) which housing body includes at least one aperture (16) formed therein and is positioned close to sensor means.

11. A means to reproduce audio sounds received by a telephone through a speaker of a radio, comprising of a converter means responsive to electrical signals from the electric and electronic circuitry to the earpiece of the telephone which produces therefrom radio signals corresponding to the audio sounds, the radio signals being received by the radio which produces the audio sounds therefrom which are reproduced by the speaker of the radio.

12. A means to reproduce audio sounds received by a telephone through a speaker of a radio as claimed in Claim 11, wherein the converter means is housed within housing body of the telephone.

13. A means to reproduce audio sounds received by a telephone through a speaker of a radio as claimed in Claims 11 and 12 wherein the converter means includes an electrical and electronic circuit means that is responsive to electrical signals from the electric and electronic circuitry to the earpiece of the telephone and transmits radio waves corresponding to audio sounds.

14. A means to reproduce audio sounds received by a telephone through a speaker of a radio as claimed in Claim 11 wherein the radio is a radio of an automobile.

15. A means to reproduce audio sounds received by a telephone through a speaker of a radio substantially as hereinbefore described with reference to the accompanying drawings.



Application No: GB 9617619.3
Claims searched: 1 to 10

Examiner: Peter Easterfield
Date of search: 28 October 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): H4J (JK, JL); H4L (LDA, LECX)

Int Cl (Ed.6): B60R 11/02; H04B 1/38; H04M 1/00, 1/60; H04Q 7/32

Other: Online: WPI, JAPIO, CLAIMS

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2264613 A (PIONEER)	1-5,7-9
X	GB 2262410 A (PROGREX) see fig.6 and page 9 line 1 to page 10 line 8 & page 11 line 17 to page 12 line 10	
A	GB 2249447 A (TECHNOPHONE)	
A	EP 0560446 A2 (PHILIPS)	

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